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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/801,106	02/28/2001	Koji Egashira	33082M072	8270

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EXAMINER

PERRIN, JOSEPH L

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 10/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/801,106

Applicant(s)

EGASHIRA ET AL.

Examiner

Joseph Perrin, Ph.D.

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 19-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) 10 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-18, drawn to an apparatus, classified in class 134, subclass 153.
 - II. Claims 19-20, drawn to a process, classified in class 134, subclass 002.
2. The inventions are distinct, each from the other because of the following reasons:
3. Inventions of Group II and Group I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced by another materially different apparatus, such as an apparatus without a processing chamber surrounded by a processing container, or an apparatus without a wafer holding member connected to a circular plate.
4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
5. During a telephone conversation with applicant's representative Mr. Michael Makuch on 26 September 2002, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-18. Affirmation of this election must be

Art Unit: 1746

made by applicant in replying to this Office action. Claims 19-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Priority

6. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

7. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, re claim 11, the "plurality of pedestals" must be shown or the feature(s) canceled from the claim(s). Also, re claim 14, the "first nozzle" with "first ejecting orifices" and "second nozzle" with "second ejecting orifices" arranged to spray "alternately-positioned substrates" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

8. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

9. The disclosure is objected to because of the following informalities: On page 11, lines 10-11, the term "N₂-gas" should be changed to --nitrogen gas--, or optionally in parentheses. Appropriate correction is required.

10. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

11. Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 10, which is directed to a processing apparatus, fails to provide any further structural limitation to the claimed apparatus. Accordingly, claim 10 has not been further treated on the merits.

12. Claim 11 is objected to because of the following informalities:

In claim 11, lines 5-6, the phrase "nozzle member" should be --nozzle members--

. Appropriate correction is required.

Claim Rejections - 35 USC § 112

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claims 4-5, 7-8 and 10-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 is considered vague and indefinite. It is unclear how "provided for the plural substrates" provides further structural limitation to the claimed apparatus. Moreover, it is unclear what "one by one" is referring to. It is believed applicant is referring to the number of ejecting orifices being equivalent to the number of substrates to be processed, and therefore, the claims will be examined accordingly. However, clarification and correction are still required.

Claim 5 recites the limitation "the two adjoining substrates " in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 is considered vague and indefinite. It is unclear how the substrate surfaces can be processed if they are adjoined.

Claim 7 is considered vague and indefinite. It is unclear how a processing liquid can be "hit". It appears applicant is referring to the liquid contacting the substrates on substantial centers of the substrates, and therefore, the claims will be examined accordingly. However, clarification and correction are still required.

Claim 8 is considered vague and indefinite. It is unclear how the ejecting orifices can be "perpendicular" to the processing surfaces, yet radially outside of the substrates.

The orifices, as claimed, would have to be radially inside the substrates in order to be defined as “perpendicular to the processing surfaces”. As best understood, the orifices are located outside the radial area of the processing surfaces and the claims will be examined accordingly. However, clarification and correction are still required.

Claim 10 is considered vague and indefinite. A single claim which claims both an apparatus and the method steps of using the apparatus (i.e., “is ejected” in line 4) is indefinite because this type of claim fails to positively recite the boundaries of protection. If applicant is attempting to describe the structural limitations by the limitations’ functions with regard to the apparatus, it is recommended that applicant uses acceptable structural claims language for the claimed apparatus and not method steps.

Claim 11 is considered vague and indefinite. It is unclear what applicant intends. The term “pedestal” is considered indefinite because it is unclear by the disclosure exactly what is meant by “pedestal”. Clarification and correction is required.

Claim 15 is considered vague and indefinite. It is unclear what is meant by “excluding an upper-projected space of the substrates”. What is an “upper-projected space”?

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 1746

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-9, 11-13, 15-16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Thompson et al. (US 5,022,419).

Thompson et al. discloses a liquid processing apparatus with processing container 12 having an angled lower portion, nozzle 28 with a plurality of orifices (i.e. 9 as shown in Figure 3), wafer holder 26 built with circular holder 122, for holding a plurality of wafers (including one for each orifice, i.e. 9), the container (including wafers) being rotatable, the orifices being positioned obliquely relative to the central axis of the wafers, relatively inclined, arranged above the wafers, and capable of spraying in a plane, or fan-shaped (see entire reference of Thompson et al., for instance, Figures 1-4, and col. 6, lines 12-14).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

Art Unit: 1746

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. in view of Thoms (US 5,378,308).

As noted above, Thompson et al. discloses the claimed invention with the exception of first and second alternatively-positioned nozzles. Thoms teaches that it is known to provide alternatively-positioned nozzles in a liquid processing apparatus for the purpose of improving the uniform distribution of a processing liquid (see, for instance, Figures 2-5, and col. 1, lines 48-51).

Therefore, the position is taken that a person of ordinary skill in the art at the time the invention was made would have been motivated to modify the apparatus, disclosed by Thompson et al., with the alternatively-positioned nozzles, disclosed by Thoms, in order to improve the uniformed application of a processing liquid. The motivation for

this combination is that it solves same problem of applicant (i.e. improvement of uniform application of processing liquid).

21. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al.

As noted above, Thompson et al. discloses the claimed invention except for the inside nozzle passage having a rectangular sectional shape. It would have been obvious to utilize any sectional shape for the inside nozzle passage capable of providing adequate processing liquid flow, since such a modification would have involved a mere change in the form or shape of a component. A change in form or shape is generally recognized as being within the level of ordinary skill in the art. In re Dailey, 149 USPQ 47 (CCPA 1976).

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,274,506 to Christenson et al., which discloses a substrate processing apparatus with a plurality of angled ejecting orifices for rotating and spraying liquid on substrates.

US 5,379,784 to Nishi et al., which discloses a wafer cleaning apparatus having a wafer holder and nozzle with a plurality of angled ejecting orifices.

US 5,221,360 to Thompson et al., which discloses a semiconductor processing apparatus with a plurality of angled ejecting orifices for rotating and spraying liquid on substrates.

US 5,154,199 to Thompson et al., which discloses a semiconductor processing apparatus with a plurality of angled ejecting orifices for rotating and spraying liquid on substrates.

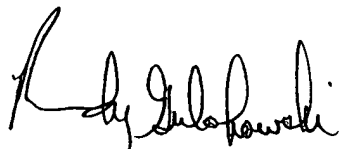
23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Perrin, Ph.D. whose telephone number is (703)305-0626. The examiner can normally be reached on M-F 7:30-5:00, except alternate Fridays.

24. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (703)308-4333. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9310 for regular communications and (703)872-9311 for After Final communications.

25. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

Joseph Perrin, Ph.D.
Examiner
Art Unit 1746

jlp
September 30, 2002


RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700